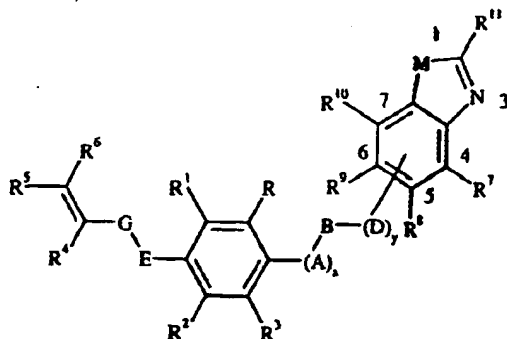


What is claimed is:

1. A compound of formula I:



I

wherein

-R and R<sup>3</sup> are independently selected from hydrogen, halogen, hydroxy, (C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>2</sub>-C<sub>5</sub>)alkenyl, (C<sub>2</sub>-C<sub>5</sub>)alkynyl, halo(C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>1</sub>-C<sub>3</sub>)alkoxy, halo(C<sub>1</sub>-C<sub>3</sub>)alkoxy, (C<sub>1</sub>-C<sub>3</sub>)alkylthio, halo(C<sub>1</sub>-C<sub>3</sub>)alkylthio, (C<sub>1</sub>-C<sub>3</sub>)alkylsulfonyl, halo(C<sub>1</sub>-C<sub>3</sub>)alkylsulfonyl, cyano, nitro; optionally substituted amino wherein the optional substituent is selected from (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>3</sub>)alkylcarbonyl and (C<sub>1</sub>-C<sub>3</sub>)alkoxycarbonyl; optionally substituted imidazolyl, optionally substituted imidazolyl, optionally substituted oxazolyl, optionally substituted oxazolyl, optionally substituted oxadiazolyl, optionally substituted thiazolyl, optionally substituted pyrazolyl, optionally substituted triazolyl, optionally substituted furanyl, optionally substituted tetrahydrofuranyl, optionally substituted dioxolanyl, optionally substituted dioxanyl, -C(=J)-K, and -C(R<sup>12</sup>)-Q-R<sup>13</sup>, wherein the optional substituent is selected from (C<sub>1</sub>-C<sub>4</sub>)alkyl, halo(C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkoxy(C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>2</sub>-C<sub>5</sub>)alkenyl, (C<sub>2</sub>-C<sub>5</sub>)alkynyl, cyano, nitro and aryl;

where

J is selected from O, S, NR<sup>14</sup>, and NOR<sup>14</sup>, where R<sup>14</sup> is hydrogen, (C<sub>1</sub>-C<sub>4</sub>)alkyl, halo(C<sub>1</sub>-C<sub>4</sub>)alkyl, aryl and aryl(C<sub>1</sub>-C<sub>4</sub>)alkyl;

K is selected from hydrogen, (C<sub>1</sub>-C<sub>3</sub>)alkyl, halo(C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>1</sub>-C<sub>3</sub>)alkoxy, (C<sub>1</sub>-C<sub>3</sub>)alkylamino and di(C<sub>1</sub>-C<sub>3</sub>)alkylamino;

Q is selected from O, S, and NR<sup>14</sup>, where R<sup>14</sup> is as previously described;

R<sup>12</sup> and R<sup>13</sup> are independently selected from hydrogen, (C<sub>1</sub>-C<sub>4</sub>)alkyl and halo(C<sub>1</sub>-C<sub>4</sub>)alkyl, and R<sup>12</sup> and R<sup>13</sup> may be taken together with -T(CHR<sup>14</sup>)<sub>m</sub>, where m is an integer of 2 to 4; T is selected from O, S, and NR<sup>14</sup>, where R<sup>14</sup> is as previously described;

-R<sup>1</sup> and R<sup>2</sup> are independently selected from hydrogen, halogen and (C<sub>1</sub>-C<sub>3</sub>)alkyl;

-R<sup>4</sup> is hydrogen;

-R<sup>5</sup> and R<sup>6</sup> are independently selected from halogen;

-E is selected from CH<sub>2</sub>, O, S and NR<sup>15</sup> where R<sup>15</sup> is selected from hydrogen, (C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>1</sub>-C<sub>3</sub>)alkoxy(C<sub>1</sub>-C<sub>3</sub>)alkyl, aryl(C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>2</sub>-C<sub>4</sub>)alkenyl(C<sub>1</sub>-C<sub>3</sub>)alkyl, halo(C<sub>2</sub>-C<sub>4</sub>)alkenyl(C<sub>1</sub>-C<sub>3</sub>)alkyl, di(C<sub>1</sub>-C<sub>3</sub>)alkylphosphonate, formyl, (C<sub>1</sub>-C<sub>3</sub>)alkylcarbonyl, halo(C<sub>1</sub>-C<sub>3</sub>)alkylcarbonyl, (C<sub>1</sub>-C<sub>3</sub>)alkoxy(C<sub>1</sub>-C<sub>3</sub>)alkylcarbonyl, arylcarbonyl and (C<sub>1</sub>-C<sub>3</sub>)alkylsulfonyl;

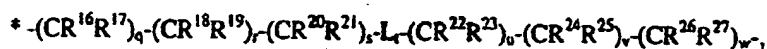
-G is selected from O, S, CH<sub>2</sub>O\* and (CH<sub>2</sub>)<sub>n</sub> where the asterisk denotes attachment to E, and n is an integer selected from 1, 2 and 3, provided that E and G are not simultaneously O or S,

-x is an integer selected from 0 or 1;

and when x is 1,

-A is selected from O, S(O)<sub>p</sub> and -NR<sup>15</sup>, where p is an integer selected from 0, 1 and 2, and R<sup>15</sup> is as previously described;

-B is a bridging group,



where

the asterisk denotes attachment at A; q, r, s, u, v and w are integers independently selected from 0, 1 and 2;

and

when q, r, s, u, v or w are 1 or 2,

R<sup>16</sup> through R<sup>27</sup>, inclusively, are independently selected from hydrogen, (C<sub>1</sub>-C<sub>3</sub>)alkyl, halo(C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>1</sub>-C<sub>3</sub>)alkoxy(C<sub>1</sub>-C<sub>3</sub>)alkyl, and (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl;

t is an integer selected from 0 or 1; and

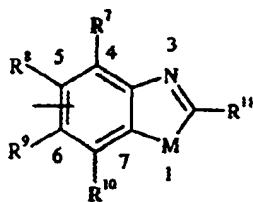
when t is 1,

L is selected from CH=CH; O, S(O)<sub>p</sub>; OS(O)<sub>2</sub>, S(O)<sub>2</sub>O, NR<sup>28</sup>, N(oxide)R<sup>28</sup>; NR<sup>28</sup>SO<sub>2</sub>; NR<sup>28</sup>C(=O)NR<sup>29</sup>; Si(CH<sub>3</sub>)<sub>2</sub>; C(=O), OC(=O), NHC(=O); ON=CH; HC=NO; C(=O)O; C(=O)NH; C(=NOR<sup>14</sup>) and [CR<sup>30</sup>R<sup>31</sup>]<sub>2</sub>, where p is as previously described, R<sup>28</sup> and R<sup>29</sup> are independently selected from hydrogen, (C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>1</sub>-C<sub>3</sub>)alkylsulfonyl, (C<sub>1</sub>-C<sub>3</sub>)alkylcarbonyl, (C<sub>2</sub>-C<sub>5</sub>)alkenyl, and (C<sub>2</sub>-C<sub>5</sub>)alkynyl; z is an integer selected from 1 or 2; and R<sup>30</sup> and R<sup>31</sup> are independently selected from hydrogen and (C<sub>1</sub>-C<sub>3</sub>)alkyl;

-y is an integer selected from 0 or 1;

and when y is 1,

-D is selected from O; S(O)<sub>p</sub>; and NR<sup>15</sup>, where p and R<sup>15</sup> are as previously described, wherein D is attached to the benzo-fused ring moiety set forth in formula I at any one of the positions designated 4-, 5-, 6- or 7-:



-R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> are independently selected from hydrogen, halogen, (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>2</sub>-C<sub>5</sub>)alkenyl, (C<sub>2</sub>-C<sub>5</sub>)alkynyl, halo(C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, halo(C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkylthio, halo(C<sub>1</sub>-C<sub>4</sub>)alkylthio, (C<sub>1</sub>-C<sub>4</sub>)alkylsulfonyl, halo(C<sub>1</sub>-C<sub>4</sub>)alkylsulfonyl, cyano, nitro, aryl, alkylcarbonylamino, arylcarbonylamino, and (C<sub>1</sub>-C<sub>4</sub>)alkoxycarbonylamino;

-R<sup>11</sup> is selected from hydrogen, halogen, hydroxyl, cyano, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, halo(C<sub>1</sub>-C<sub>6</sub>)alkyl, halo(C<sub>1</sub>-C<sub>6</sub>)alkoxy, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl, (C<sub>1</sub>-C<sub>6</sub>)cycloalkyl, amino, (C<sub>1</sub>-C<sub>6</sub>)alkylamino, di(C<sub>1</sub>-C<sub>6</sub>)alkylamino, (C<sub>1</sub>-C<sub>6</sub>)alkylthio, aryl, arylthio, tri(C<sub>1</sub>-C<sub>6</sub>)alkylsilyl, SF<sub>3</sub>, C(=O)NR<sup>14</sup> and NOR<sup>14</sup> where R<sup>14</sup> is as previously described;

-M is O or S;

and  
agriculturally acceptable salts thereof.

2. A compound of claim 1, wherein R and R<sup>3</sup> are independently selected from halogen and (C<sub>1</sub>-C<sub>3</sub>)alkyl;

R<sup>1</sup>, R<sup>2</sup>, and R<sup>4</sup> are hydrogen;

R<sup>5</sup> and R<sup>6</sup> are independently selected from chlorine, bromine, and fluorine;

E is O;

G is (CH<sub>2</sub>)<sub>n</sub>, where n is 1;

x is 1, and A is O;

and

when q, r, s, u, v and w are 1 or 2, R<sup>16</sup> through R<sup>27</sup>, inclusively, are hydrogen;

t is 0 or 1,

and

when t is 1,

L is selected from O, OC(=O), NHC(=O), ON=CH, and CH=NO;

y is 1,

and

D is selected from O; S(O)<sub>p</sub>; and NR<sup>15</sup>, where p is 0, and R<sup>15</sup> is selected from hydrogen, (C<sub>1</sub>-C<sub>3</sub>)alkyl, aryl(C<sub>1</sub>-C<sub>3</sub>)alkyl, (C<sub>2</sub>-C<sub>4</sub>)alkenyl(C<sub>1</sub>-C<sub>3</sub>)alkyl, and halo(C<sub>2</sub>-C<sub>4</sub>)alkenyl(C<sub>1</sub>-C<sub>3</sub>)alkyl, wherein D is attached to the benzo-fused moiety set forth in formula I at the position designated 5 or 6;

R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> are independently selected from hydrogen, halogen, halo(C<sub>1</sub>-C<sub>4</sub>)alkyl and nitro;

and

R<sup>11</sup> is selected from (C<sub>1</sub>-C<sub>4</sub>)alkyl and halo(C<sub>1</sub>-C<sub>4</sub>)alkyl;

3. A compound of claim 2, wherein R and R<sup>3</sup> are independently selected from chlorine and methyl;

R<sup>5</sup> and R<sup>6</sup> are independently selected from chlorine and bromine;

q, r, s, u, v and w are 1 or 2, provided that the sum of q, r, s, u, v and w is at least 2 and at most 6;

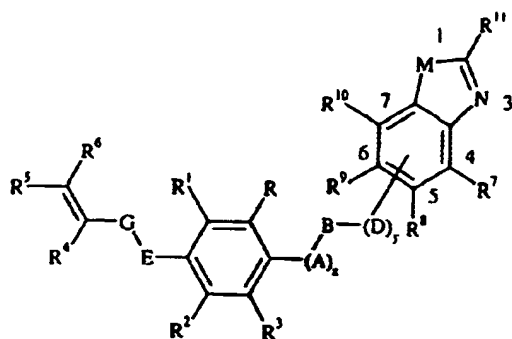
t is 0;

D is O, wherein D is attached to the benzo-fused moiety set forth in formula I at the position designated as 5 or 6;

R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> are hydrogen; and

R<sup>11</sup> is methyl or trifluoromethyl.

4. A compound of claim 3, wherein R, R<sup>3</sup>, R<sup>5</sup> and R<sup>6</sup> are each chlorine; q, r and s are 1; u and v are 0 or 1; w is 0; M is O and R<sup>11</sup> is trifluoromethyl.
5. A compound of claim 3, wherein R, R<sup>3</sup>, R<sup>5</sup> and R<sup>6</sup> are each chlorine; q, r and s are 1; u and v are 0 or 1; w is 0; M is S and R<sup>11</sup> is methyl.
6. A composition comprising an insecticidally effective amount of a compound of claim 1 in admixture with at least one agriculturally acceptable extender or adjuvant.
7. The insecticidal composition of claim 6, further comprising one or more second compounds selected from the group consisting of pesticides, plant growth regulators, fertilizers and soil conditioners.
8. A method of controlling insects, comprising applying an insecticidally effective amount of a composition of claim 6 to a locus where insects are present or are expected to be present.
9. A method of controlling insects, comprising applying an insecticidally effective amount of a composition of claim 7 to a locus where insects are present or are expected to be present.
10. A compound of formula I:



I

wherein

-R and R<sup>3</sup> are independently selected from hydrogen, halogen or (C<sub>1</sub>-C<sub>3</sub>)alkyl;

-R<sup>1</sup> and R<sup>2</sup> are hydrogen;

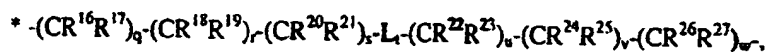
-E is O; G is (CH<sub>2</sub>)<sub>n</sub> where n is 1;

-R<sup>4</sup> is hydrogen;

-R<sup>5</sup> and R<sup>6</sup> are independently selected from halogen;

-x is 1 and A is O;

-B is a bridging group



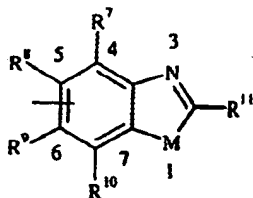
where

the asterisk denotes attachment at A; q, r, s, u, v and w are integers independently selected from 0, 1 and 2; and t is 0;

and

when q, r, s, u, v or w are 1 or 2, R<sup>16</sup> through R<sup>27</sup>, inclusively, are hydrogen,

-y is 1, and D is O, and wherein D is attached to the benzo-fused ring moiety set forth in formula I at either one of the positions designated 5- or 6-:



-R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> are independently selected from hydrogen, halogen or (C<sub>1</sub>-C<sub>4</sub>)alkyl;

-R<sup>11</sup> is selected from (C<sub>1</sub>-C<sub>3</sub>)alkyl and halo(C<sub>1</sub>-C<sub>3</sub>)alkyl; and  
M is O or S

11. A compound of claim 10, wherein R and R<sup>3</sup> are independently selected from chlorine and methyl;

R<sup>5</sup> and R<sup>6</sup> are independently selected from chlorine and bromine;

q, r, s, u, v and w are 0, 1 or 2, provided that the sum of q, r, s, u, v and w is at least 2 and at most 6;

R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> are hydrogen; and

R<sup>11</sup> is methyl or trifluoromethyl.

12. A compound of claim 11, wherein R, R<sup>3</sup>, R<sup>5</sup> and R<sup>6</sup> are each chlorine; q, r and s are 1; u and v are 0 or 1; w is 0; M is O and R<sup>11</sup> is trifluoromethyl.

13. A compound of claim 11, wherein R, R<sup>3</sup>, R<sup>5</sup> and R<sup>6</sup> are each chlorine; q, r and s are 1; u and v are 0 or 1; w is 0; M is S and R<sup>11</sup> is methyl.